CLAIMS

What is claimed is:

1.   A method to obtain information transmitted between a source station and a destination station in a non broadcast multiple access network, comprising:
establishing a connection between the source station and a server for the destination station, the server having a server cache containing the information;
transmitting a request packet having parameters relating to the information to the server; and
receiving a reply packet containing the information from the server, the reply packet matching the parameters of the request packet.

2.   The method of Claim 1 wherein the information comprises an internetwork layer address of the destination station.

3.   The method of Claim 1 wherein the information comprises an instance of a resource information.

4.   The method of Claim 3 wherein the resource information comprises a resource availability and an upper layer address information.

5.   The method of Claim 2 further comprising:
caching the address in a source cache;
inserting the address in a data packet; and

forwarding the data packet to the destination station.

6.   The method of Claim 2 wherein the request packet and the reply packet are instances of a protocol packet.

7.   The method of Claim 6 wherein the protocol packet comprises a fixed part and a mandatory part.

8.   The method of Claim 6 wherein the protocol packet further comprises an extensions part.

9.   The method of Claim 8 wherein the fixed part comprises at least one of a type field specifying a packet type and an extension offset field specifying if the extension part exists and a location of the extension part if the extension part exists.

10.   The method of Claim 9 wherein the fixed part further comprises at least one of a link layer address field specifying a type of link layer addresses being carried, a protocol field specifying a protocol being used, a packet length field specifying a length of the protocol packet, a checksum field specifying a checksum value, a version field specifying a version of the protocol, a type and length of source address field specifying a type and length of a source NBMA address, and a type and length of source subaddress field specifying a type and length of a source NBMA subaddress.

11.   The method of Claim 9 wherein the packet type is one of a resolution request type, a resolution reply type, a registration request type, and a registration reply type.

12.   The method of Claim 11 wherein the request packet is one of a resolution request packet and a registration request packet, the resolution and the registration request packets corresponding to the resolution and registration request types, respectively.

13.   The method of Claim 11 wherein the reply packet is one of a resolution reply packet and a registration reply packet, the resolution and the registration reply packets corresponding to the resolution and registration reply types, respectively.

14.   The method of Claim 13 wherein the mandatory part comprises a common header.

15.   The method of Claim 14 wherein the mandatory part further comprises at least a client information entry (CIE).

16.   The method of Claim 14 wherein the common header comprises at least one of a flag field specifying a flag and a request identification (ID) field specifying a request ID.

17.   The method of Claim 16 wherein the common header further comprises at least one of a source NBMA address field specifying the source NBMA address, a source NBMA subaddress field specifying the

source NBMA subaddress, a source protocol address field specifying a source protocol address of the source station, and a destination protocol address field specifying a destination protocol address of one of the destination station and the server.

18.   The method of Claim 15 wherein the CIE comprises at least one of a code field specifying an acknowledgment of the request packet in the reply packet, a maximum transmission unit field specifying a maximum transmission unit and a holding time field specifying a holding time for which data in the CIE are valid. 19.   The method of Claim 18 wherein the CIE further comprises at least one of a client address time and length field specifying a time and length of a client address interpreted by the link layer address field in the fixed part, a client subaddress time and length field specifying a time and length of a client subaddress interpreted by the link layer address field in the fixed part, a client NBMA address field specifying a client NBMA address, a client NBMA subaddress field specifying a client NBMA subaddress, and a client protocol address field specifying a client internetworking layer address.

20.   The method of Claim 16 wherein the flag of the resolution request packet comprises at least one of a station type specifying whether the source station is a router or a host, a uniqueness value specifying that only a CIE matching the parameters and having the same uniqueness value is included in the reply packet, and a guarantee value specifying that a binding of the information is guaranteed stable and accurate.

21.   The method of Claim 17 wherein the flag of the resolution reply packet comprises at least one of a station type specifying whether

the source station is a router or a host, a destination value specifying that an association of information between the destination and source stations is guaranteed stable within the holding time, a uniqueness value specifying that only a CIE matching the parameters and having the same uniqueness value is included in the reply packet, and a guarantee value specifying that a binding of the information is guaranteed stable and accurate.

22.   The method of Claim 17 wherein the flag of the registration request packet comprises at least a uniqueness value specifying that a registration of the information is unique.

23.   The method of Claim 8 wherein the extension part comprises at least an extension type-length-value (TLV) triplet.

24.   The method of Claim 8 wherein the extension TLV triplet in the protocol packet contains information regarding one of an internetwork layer address of a station, an internet protocol (IP) address of the destination station, an availability of an upper layer protocol resource, and an instance of an upper layer protocol resource.

25.   The method of Claim 24 wherein the extension TLV triplet comprises at least one of a compulsory value specifying if the extension part is ignored, an extension type specifying an extension protocol being used, an extension value specifying an extension information, and an extension length specifying a length of an extension value.

26.   The method of Claim 24 wherein the extension part is terminated by an end-of-extension TLV triplet.

27.   The method of Claim 24 wherein the extension TLV triplet contains vendor private information including a vendor identification.

28.   The method of Claim 22 wherein the parameters include at least one of the fixed part and the mandatory part.

29.   The method of Claim 28 wherein the parameters further include the extension part.

30.   The method of Claim 29 further comprising:
updating the information in one of the server cache and the source cache according to a synchronous cache management scheme.

31.   A computer program product comprising:
a computer usable medium having computer program code embodied therein to obtain information transmitted between a source station and a destination station in a non broadcast multiple access network, the computer program product having:
computer readable program code for establishing a connection between the source station and a server for the destination station, the server having a cache containing the information;
computer readable program code for transmitting a request packet having parameters relating to the information to the server; and

computer readable program code for receiving a reply packet containing the information from the server, the reply packet matching the parameters of the request packet.

32.   The computer program product of Claim 31 wherein the information comprises an internetwork layer address of the destination station.

33.   The computer program product of Claim 31 wherein the information comprises an instance of a resource information.

34.   The computer program product of Claim 33 wherein the resource information comprises a resource availability and an upper layer address information.

35.   The computer program product of Claim 32 further comprising:
     computer readable program code for caching the address in a source cache;
     computer readable program code for inserting the address in a data packet; and
     computer readable program code for forwarding the data packet to the destination station.

36.   The computer program product of Claim 32 wherein the request packet and the reply packet are instances of a protocol packet.

37. The computer program product of Claim 36 wherein the protocol packet comprises a fixed part and a mandatory part.

38. The computer program product of Claim 36 wherein the protocol packet further comprises an extensions part.

39. The computer program product of Claim 38 wherein the fixed part comprises at least one of a type field specifying a packet type and an extension offset field specifying if the extension part exists and a location of the extension part if the extension part exists.

40. The computer program product of Claim 39 wherein the fixed part further comprises at least one of a link layer address field specifying a type of link layer addresses being carried, a protocol field specifying a protocol being used, a packet length field specifying a length of the protocol packet, a checksum field specifying a checksum value, a version field specifying a version of the protocol, a type and length of source address field specifying a type and length of a source NBMA address, and a type and length of source subaddress field specifying a type and length of a source NBMA subaddress.

41. The computer program product of Claim 39 wherein the packet type is one of a resolution request type, a resolution reply type, a registration request type, and a registration reply type.

42. The computer program product of Claim 41 wherein the request packet is one of a resolution request packet and a registration

request packet, the resolution and the registration request packets corresponding to the resolution and registration request types, respectively.

43.   The computer program product of Claim 41 wherein the reply packet is one of a resolution reply packet and a registration reply packet, the resolution and the registration reply packets corresponding to the resolution and registration reply types, respectively.

44.   The computer program product of Claim 37 wherein the mandatory part comprises a common header.

45.   The computer program product of Claim 44 wherein the mandatory part further comprises at least a client information entry (CIE).

46.   The computer program product of Claim 44 wherein the common header comprises at least one of a flag field specifying a flag and a request identification (ID) field specifying a request ID.

47.   The computer program product of Claim 46 wherein the common header further comprises at least one of a source NBMA address field specifying the source NBMA address, a source NBMA subaddress field specifying the source NBMA subaddress, a source protocol address field specifying a source protocol address of the source station, and a destination protocol address field specifying a destination protocol address of one of the destination station and the server.

48.   The computer program product of Claim 45 wherein the CIE comprises at least one of a code field specifying an acknowledgment of the request packet in the reply packet, a maximum transmission unit field specifying a maximum transmission unit and a holding time field specifying a holding time for which data in the CIE are valid.

49.   The computer program product of Claim 48 wherein the CIE further comprises at least one of a client address time and length field specifying a time and length of a client address interpreted by the link layer address field in the fixed part, a client subaddress time and length field specifying a time and length of a client subaddress interpreted by the link layer address field in the fixed part, a client NBMA address field specifying a client NBMA address, a client NBMA subaddress field specifying a client NBMA subaddress, and a client protocol address field specifying a client internetworking layer address.

50.   The computer program product of Claim 46 wherein the flag of the resolution request packet comprises at least one of a station type specifying whether the source station is a router or a host, a uniqueness value specifying that only a CIE matching the parameters and having the same uniqueness value is included in the reply packet, and a guarantee value specifying that a binding of the information is guaranteed stable and accurate.

51.   The computer program product of Claim 47 wherein the flag of the resolution reply packet comprises at least one of a station type specifying whether the source station is a router or a host, a destination value specifying that an association of information between the

destination and source stations is guaranteed stable within the holding time, a uniqueness value specifying that only a CIE matching the parameters and having the same uniqueness value is included in the reply packet, and a guarantee value specifying that a binding of the information is guaranteed stable and accurate.

52. The computer program product of Claim 47 wherein the flag of the registration request packet comprises at least a uniqueness value specifying that a registration of the information is unique.

53. The computer program product of Claim 38 wherein the extension part comprises at least an extension type-length-value (TLV) triplet.

54. The computer program product of Claim 38 wherein the extension TLV triplet in the protocol packet contains information regarding one of an internetwork layer address of a station, an internet protocol (IP) address of the destination station, an availability of an upper layer protocol resource, and an instance of an upper layer protocol resource.

55. The computer program product of Claim 54 wherein the extension TLV triplet comprises at least one of a compulsory value specifying if the extension part is ignored, an extension type specifying an extension protocol being used, an extension value specifying an extension information, and an extension length specifying a length of an extension value.

56.   The computer program product of Claim 54 wherein the extension part is terminated by an end-of-extension TLV triplet.

57.   The computer program product of Claim 54 wherein the extension TLV triplet contains vendor private information including a vendor identification.

58.   The computer program product of Claim 52 wherein the parameters include at least one of the fixed part and the mandatory part.

59.   The computer program product of Claim 58 wherein the parameters further include the extension part.

60.   The computer program product of Claim 59 further comprising computer program code segment for updating the information in one of the server cache and the source cache according to a synchronous cache management scheme.

61.   A system comprising:
a server operating in a non broadcast multiple access network (NBMA), the server having a cache containing information on a destination station;
a source station coupled to the server via a connection to obtain the information, the source station transmitting a request packet to the server, the request packet having parameters relating to the information; and

wherein the server transmits a reply packet containing the information to the source station, the reply packet matching the parameters of the request packet.

62.   The system of Claim 61 wherein the information comprises an internetwork layer address of the destination station.

63.   The system of Claim 61 wherein the address comprises an instance of a resource information.

64.   The system of Claim 63 wherein the resource information comprises a resource availability and an upper layer address information.

65.   The system of Claim 62 wherein the source station comprises:

a source cache to cache the address, the address being inserted in a data packet, the data packet being forwarded to the destination station.

66.   The system of Claim 62 wherein the request packet and the reply packet are instances of a protocol packet.

67.   The system of Claim 66 wherein the protocol packet comprises a fixed part and a mandatory part.

68.   The system of Claim 66 wherein the protocol packet further comprises an extensions part.

69.   The system of Claim 68 wherein the fixed part comprises at least one of a type field specifying a packet type and an extension offset field specifying if the extension part exists and a location of the extension part if the extension part exists.

70.   The system of Claim 69 wherein the fixed part further comprises at least one of a link layer address field specifying a type of link layer addresses being carried, a protocol field specifying a protocol being used, a packet length field specifying a length of the protocol packet, a checksum field specifying a checksum value, a version field specifying a version of the protocol, a type and length of source address field specifying a type and length of a source NBMA address, and a type and length of source subaddress field specifying a type and length of a source NBMA subaddress.

71.   The system of Claim 69 wherein the packet type is one of a resolution request type, a resolution reply type, a registration request type, and a registration reply type.

72.   The system of Claim 71 wherein the request packet is one of a resolution request packet and a registration request packet, the resolution and the registration request packets corresponding to the resolution and registration request types, respectively.

73.   The system of Claim 71 wherein the reply packet is one of a resolution reply packet and a registration reply packet, the resolution and the registration reply packets corresponding to the resolution and registration reply types, respectively.

74.   The system of Claim 67 wherein the mandatory part comprises a common header.

75.   The system of Claim 74 wherein the mandatory part further comprises at least a client information entry (CIE).

76.   The system of Claim 74 wherein the common header comprises at least one of a flag field specifying a flag and a request identification (ID) field specifying a request ID.

77.   The system of Claim 76 wherein the common header further comprises at least one of a source NBMA address field specifying the source NBMA address, a source NBMA subaddress field specifying the source NBMA subaddress, a source protocol address field specifying a source protocol address of the source station, and a destination protocol address field specifying a destination protocol address of one of the destination station and the server.

78.   The system of Claim 75 wherein the CIE comprises at least one of a code field specifying an acknowledgment of the request packet in the reply packet, a maximum transmission unit field specifying a maximum transmission unit and a holding time field specifying a holding time for which data in the CIE are valid.

79.   The system of Claim 78 wherein the CIE further comprises at least one of a client address time and length field specifying a time and length of a client address interpreted by the link layer address field in the

fixed part, a client subaddress time and length field specifying a time and length of a client subaddress interpreted by the link layer address field in the fixed part, a client NBMA address field specifying a client NBMA address, a client NBMA subaddress field specifying a client NBMA subaddress, and a client protocol address field specifying a client internetworking layer address.

80.   The system of Claim 76 wherein the flag of the resolution request packet comprises at least one of a station type specifying whether the source station is a router or a host, a uniqueness value specifying that only a CIE matching the parameters and having the same uniqueness value is included in the reply packet, and a guarantee value specifying that a binding of the information is guaranteed stable and accurate.

81.   The system of Claim 77 wherein the flag of the resolution reply packet comprises at least one of a station type specifying whether the source station is a router or a host, a destination value specifying that an association of information between the destination and source stations is guaranteed stable within the holding time, a uniqueness value specifying that only a CIE matching the parameters and having the same uniqueness value is included in the reply packet, and a guarantee value specifying that a binding of the information is guaranteed stable and accurate.

82.   The system of Claim 77 wherein the flag of the registration request packet comprises at least a uniqueness value specifying that a registration of the information is unique.

83.   The system of Claim 68 wherein the extension part comprises at least an extension type-length-value (TLV) triplet.

84.   The system of Claim 68 wherein the extension TLV triplet in the protocol packet contains information regarding one of an internetwork layer address of a station, an internet protocol (IP) address of the destination station, an availability of an upper layer protocol resource, and an instance of an upper layer protocol resource.

85.   The system of Claim 84 wherein the extension TLV triplet comprises at least one of a compulsory value specifying if the extension part is ignored, an extension type specifying an extension protocol being used, an extension value specifying an extension information, and an extension length specifying a length of an extension value.

86.   The system of Claim 84 wherein the extension part is terminated by an end-of-extension TLV triplet.

87.   The system of Claim 84 wherein the extension TLV triplet contains vendor private information including a vendor identification.

88.   The system of Claim 82 wherein the parameters include at least one of the fixed part and the mandatory part.

89.   The system of Claim 88 wherein the parameters further include the extension part.

90.   The system of Claim 89 wherein the server updates the information in the server cache according to a synchronous cache management scheme.